

aligning the fibers to optical ports on the wafer, respectively, based on at least the received light; and

bring end facets of the fibers to be in contact with the optical ports, respectively; and

applying an adhesive at an interface between an end facet of each fiber and a corresponding optical port to bond the fiber to the optical port.

82. **(Withdrawn)** The method as in claim 76, further comprising using at least one multi-mode fiber as one of the optical waveguides.

83. **(Withdrawn)** The method as in claim 76, further comprising using at least one single-mode fiber as one of the optical waveguides.

84. **(Withdrawn)** The method as in claim 76, further comprising using at least one polarization maintaining fiber as one of the optical waveguides.

Remarks

Applicant respectfully requests reconsideration of this application, as amended, and consideration of the following remarks.

Rejections

Rejections under 35 U.S.C. §103

Claims 44-68

Claims 44-68 were rejected under 35 U.S.C. §103(a) as being unpatentable over Zheng et al., US 2004/0081399 (Zheng) in view of Nikonov et al., US 6,859,587 (Nikonov). On page 2 and 3 of the office action Examiner states in pertinent part that:

[...] Zheng et al disclosed (fig 2) a device comprising: a wafer [...] the optical coupler operable to couple light incident from **a device above the wafer** [...] Nikonow et al teach at least one optical alignment structure (the point that set to align probes 210, 220) on the wafer surface and **spatially separated** from the optical coupler [...]

Applicants respectfully traverse the rejection because the combination does not teach each and every element of the invention as claimed in claims 44-68. With regard to claim 44, Zheng does not teach **optical grating coupler** as recited in the claim. Examiner points out to fig 2 of Zheng at the grating coupler 200 as being a structure falling under the language of claim 44. Applicants respectfully submit that one of ordinary skill in the art at the time of the invention would recognize that the **grating coupler 200** disclosed by Zheng, however, being characterized to couple (redirect) light from the interior of the waveguide through the opposite side of the waveguide from the grating (see first sentence in abstract and paragraph [0030]), cannot be considered an **optical grating coupler** within the meaning of claim 44, wherein the **optical grating coupler** of the present invention couples light incident from a device above the wafer as illustrated as coupler 240 in FIG. 3A of the application. As explained above, Zheng fails to disclose **optical grating coupler** within the meaning of claim 44. The coupling mechanism of Nikonow does not cure this deficiency. As neither Zheng nor Nikonov teaches **optical grating coupler** as claimed in claim 44, the combination cannot be interpreted to disclose the claimed element. Further, Nikonov does not teach optical alignment structure **spatially separated** from the optical grating coupler as recited in the claim. Examiner points

out to Nikonow, on page 3 of the office action, at the point that set to align probes 210, 220 as being an optical alignment structure falling under the language of claim 44. Applicants respectfully submit that one of ordinary skill in the art at the time of the invention would recognize that the point that set to align probes 210, 220 disclosed by Nikonow, however, not being **spatially separated** from the optical coupler (Nikonow teaches that the probes 210, 220 are optical couplers as they are coupled to a first and second portion of the waveguide), cannot be considered an optical alignment structure within the meaning of claim 44, wherein the optical alignment structure of the present invention (as illustrated as alignment dot marks 720 in FIG. 7A of the application) is spatially separated from the optical coupler (as illustrated as grating coupler in 240 in FIG. 7A of the application.) As explained above, Nikonov fails to disclose optical alignment structure within the meaning of claim 44. The optical grating of Zheng does not cure this deficiency. As neither Zheng nor Nikonov teaches optical alignment structure as claimed in claim 44, the combination cannot be interpreted to disclose the claimed element. Optical alignment structure **spatially separated** from the optical grating coupler according to Applicants' invention enables the integrated component and the optical grating coupler (page 3 lines 7-13, "the optical component or device") to be tested by first optically locating a nearby optical alignment structure (page 3 lines 7-13, "optical alignment mark") and then using the known positional relationship between the optical alignment structure and the integrated component associated with the optical grating coupler to accurately locate the integrated component and the optical grating coupler. Such alignment allows one or more optical components or devices to be tested with one optical alignment structure (page 3, lines 3-6.) Such alignment and test capability is not possible with the coupling mechanism as in Nikonov (wherein alignment structure coincides with optical coupler), even if combined with

the grating coupler of Zheng. Because the combination of references misses elements that provide capabilities not suggested by the prior art, the combination does not render the claimed invention obvious under 35 U.S.C. §103(a).

Therefore, the combination cannot render obvious Applicants invention as claimed in claims 44, and Applicants respectfully request withdrawal of the rejection of the claims under 35 U.S.C. §103(a) over the combination.

Claims 45-68 depend from claim 44, and are therefore not rendered obvious by the combination of Zheng and Nikonov at least for the same reasons as claim 44. Nevertheless, a few additional differentiating features are pointed out below.

With regard to claim 45-49, applicants respectfully submit that one of ordinary skill in the art at the time of the invention would recognize that Nikonov does not teach optically retro-reflective, Littrow grating, has shaped as a dot.

With regard to claim 50, 51, 64, 65, applicants respectfully submit that one of ordinary skill in the art at the time of the invention would recognize that Nikonov only teaches optical circuits in col. 1 lines 10-20 and that Nikonov does not teach integrated **electronic** circuit on the wafer within the meaning of claims 50 and 64 of the present invention.

With regard to claim 52, it is not clear what Examiner is referring to by (20, 22).

With regard to claim 53, applicants respectfully submit that one of ordinary skill in the art at the time of the invention would recognize that Nikonov does not teach a grating coupler in fig 1.

With regard to claim 54, it is not clear what Examiner is referring to by (20, 22).

With regard to claim 66-68, Examiner points to alignment stages 230 and 232 of Nikonov as being equivalent to an optical alignment structure. Applicants respectfully submit that this interpretation of the invention and Nikonov is clearly erroneous. Use of the adjective “alignment” is the only shared attribute, but the two elements otherwise have very different structures and functions. The alignment stages 230 and 232 of Nikonov are mechanical motion stages and are located outside the wafer (see FIG. 3 and column 2 lines 29-36 of Nikonov). They are apparently intended to work to optimize the signal to be applied and measured for testing the substrate, although it is unclear how the alignment stages would be aligned with substrate waveguides in the first place. On the other hand, an alignment structure as recited in claim 66-68 is fabricated on the wafer. The purpose of the alignment structure is to be used by an external device to guide the positioning of the external device with respect to the substrate. Accordingly, Nikonov does not teach an alignment structure fabricated on the wafer.

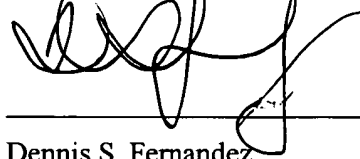
Accordingly, Applicants submit that the invention as claimed in claim 44-68 are not rendered obvious by the combination of Zheng and Nikonov under 35 U.S.C. § 103(a) and respectfully request the withdrawal of the rejection of the claims.

Conclusion

In view of the foregoing, Applicant believes that all of the claims 44-68 are now in condition for allowance and respectfully requests the Examiner to issue a timely Notice of Allowance. If for any reason, the Examiner believes any of the claims are not in condition for allowance, he is encouraged to phone the undersigned at (650) 325-4999 so that any remaining issues may be resolved.

The above changes are believed not to add new matter, as support is found in the specification.

Respectfully submitted,



Dennis S. Fernandez

Reg. No. 34,160

Date: 8/10/06

Address: **FERNANDEZ & ASSOCIATES LLP**
Patent Attorneys
1047 El Camino Real
Menlo Park, CA 94025

Customer No: **22877**

Phone: (650) 325-4999
Fax: (650) 325-1203
Email: iploft@iploft.com